

Work Order ID 83703

83703

Page 1

April-23-12 4:01:43 PM

Item ID: D206-667-101

Accept

N9000040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Fwd

Start Date: 23/04/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 07/05/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLF

Date: 12/04/24 Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D206-667-141

Rev C (DEO)

DSI9565

A

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-101 CHG004

8/12/10/10

MLF 12/05/07

110

0.00

110

Packaging

Packaging

Memo

0.00

Packaging

DP 12-5-1

W/O:		WORK ORDER CHANGES						
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
120	BENDING MACHINE - CROSSTUBES								
CNC Bend 1	Memo	0.00							
CNC Delta 100 Bender	Bend tube as per Dwg D206-667-141 using CNC bender program 206B-fw and Folio FT _____								
130	QC15- Crosstube Dimensional Check	0.00							
130									
QC	Memo	0.00							
Quality Control									

12-5-1

81765101

POSITIVE RECALL
EFFECTIVE 12/30/12 AUTH [Signature]
RELEASED 8 DATE 12/10/12

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Run Start *NR1*

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Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140

0.00

140

Crosstubes

0.00

Crosstubes

Crosstubes

Memo

1-Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-141. Drill all (3) top holes.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8541 & DT8542 as per Dwg D206-667-141. Drill only the top (2) holes.

5-Drill pilot holes as per Dwg D206-667-141. Drill only the top (2) holes.

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-141. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-141.

8-C'sink holes as per Dwg D206-667-141. Allow rivet to sit below surface to compensate for paint.

9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-141 Inside of Cuff (Do not engrave on outside of tube)

10-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-141

MO/RM

12-5-1

RM
12-5-1

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Page 4

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N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 23/04/2012 **Start Qty:** 1.00

*** 1 ***

Cust Item ID:

Required Date: 07/05/2012 **Req'd Qty:** 1.00

* 1 *

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Operation Description

Set Up/ Run Hours

Tool ID

Tool #

Plan
Code

**Accept
Qty**

Reject
Qty

Reject Number

**Insp.
Stamp**

Crosstubes Chemical Conversion

0.00

150

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

QC3- Inspect Part Finish

0.00

160

QC

Memo

0.00

Quality Control

QC5- Inspect part completeness to step on W/O

0,00

170

QC

Memo

0.00

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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

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Page 5

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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

Outsource process - NDT per QSI038 4.1

0.00

180

Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038Or
Issue P/O 16903 LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

112-05-4

190

Packaging

0.00

190

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

1x

500
12-5-4

200

QC5- Inspect part completeness to step on W/O

0.00

200

QC

Memo

0.00

Quality Control

Inspect for damage & ensure results are as per Dwg D206-667-103

12-05-04

W/O:		WORK ORDER CHANGES						
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Page 6

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1

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Required Date: 07/05/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

0.00

210

SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2.1
*****Let tube sit up right for 30mins before hanging*****

P4500-P-23 Base Batch: 121334
P4500-C-23 Catalyst Batch: 120133

Start time: 6:30 Finish: 7:15

AB 12-5-5

230

0.00

230

SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Paint outside crosstube with White Imron as per QSI 005 4.2

Imron 55U white paint Batch: 120985
Imron 125S activator Batch: 121297

Start: 11:15 Finish: 12:00

AB 12-5-5

Clear: 121625
Start: 4:45
Finish: 5:30

★ CLEAR CONT
PER ATTACHED
INSTRUCTION 12-05-04

W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE				By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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April-23-12 4:01:43 PM

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Page 7

Item ID: D206-667-101

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N900040100

Setup Start ***NS1***

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Stop ***NS2***

Item Name: Crosstube Fwd

Start Date: 23/04/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 07/05/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

240

QC14- Inspect Spray Paint

0.00

240

QC

Memo

0.00

Quality Control

250

Crosstubes

0.00

250

Crosstubes

Memo

0.00

Crosstubes

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9565 and QSI 015

A/R Proseal 890 Batch: 121287

3- Torque bolts as per dwg

3-Install nut plates as per Dwg D206-667-141. Touch-up rivet heads with Imron paint.

AS 12-5-6

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

April-23-12 4:01:43 PM

Page 8

Accept

Setup Start *NS1*

Stop *NS2*

Start Date: 23/04/2012 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 07/05/2012 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

260

QC5- Inspect part completeness to step on W/O

0.00

260

QC

Memo

0.00

Quality Control

270

Pick Kit

0.00

270

Packaging

Memo

0.00

Packaging

280

QC4- 100% Inspect kits for completeness

0.00

280

QC

Memo

0.00

W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE				By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Work Order ID 83703

83703

Page 9

April-23-12 4:01:43 PM

Item ID: D206-667-101 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Crosstube Fwd
 Start Date: 23/04/2012 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 07/05/2012 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
290	Packaging	0.00							
290									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D206-667-101								
	Location: _____								
	PPP Rev: <u>63</u>								
300	QC21- Final Inspection - Work Order Release	0.00							
300									
QC	Memo	0.00							
Quality Control									

4/25 12/05/07
 MF
 12-05-07

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

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NOTE: Date & initial all entries

Picklist Print

April-23-12 4:01:47 PM

Page 1
4

Work Order ID: 83703

83703

Parent Item: D206-667-101

D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 23/04/2012

Required Date: 07/05/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:F05.09.01Add holes for compatibility with Bell SkidtubesKJ/JLM
IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:ec
IPP Rev:H 08-07-28 update as per (par 08-013) DD verified by:EC
IPP Rev J 09.01.06 Per ECN 08-562 EC verified by:DD IPP REV:K
11.08.05 PER ECN 11-615 DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2873-043		Manufactured	No			250	Each	18.0000	2	2			
D2873-043									**			AB 12-5-6	
Nut Plate Assembly													
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG052		18							
				72644		2							
				81502		16				2			
D2873-045		Manufactured	No			250	Each	11.0000	2	2			
D2873-045									**			AB 12-5-6	
Nut Plate Assembly													
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG052		11							
				81425		11				2			
D2891-1		Manufactured	No			250	Each	28.0000	2	2			
D2891-1									**			AB 12-5-6	
2.25 Support													
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG052		28							
				72822		1							
				75176		1							
				80160		6				2			
				82277		20							

W/O:		WORK ORDER CHANGES								
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April-23-12 4:01:47 PM

Page 2

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D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 23/04/2012

Required Date: 07/05/2012

Start Qty: 1.00

Required Qty: 1.00

D3595-063-395

Manufactured No

250

Each

70.0000

4

4

D3595-063-395

RUBBER CUSHION

**

AP 12-5-6

Location

Loc Qty

Loc Code

LG051

70

82223

70

MS20601-AD4W8

Purchased

No

250

Each

128.0000

14

14

MS20601-AD4W8

RIVET

**

AP 12-5-6

Location

Loc Qty

Loc Code

LG051

78

121017

78

ST322

50

121255

50

AN5-30A

Purchased

No

270

Each

89.0000

4

4

AN5-30A

BOLT

**

AP 12-5-6

Location

Loc Qty

Loc Code

ST339

89

117514

7

120423

27

120910

25

121259

30

120 423

April-23-12 4:01:47 PM

Shop Packet Print

Page 2

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April-23-12 4:01:47 PM

Page 3

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D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 23/04/2012

Required Date: 07/05/2012

Start Qty: 1.00

Required Qty: 1.00

AN5-32A

Purchased

No

270

Each

204.0000

4

4

AN5-32A

Bolt

**

Location

Loc Qty

Loc Code

ST339

204

119328

39

119862

50

120423

75

120910

30

121415

10

119328

AN5-7A

Purchased

No

270

Each

2,633.000

10

10

AN5-7A

Bolt

**

Location

Loc Qty

Loc Code

ST337

2633

119017

2633

119017

AN960JD516

NAS1149D0563J

Purchased

No

270

Each

0.0000

18

18

AN960JD516

Washer

**

MS21042L5

Purchased

No

270

Each

1,351.000

4

4

MS21042L5

Nut

**

Location

Loc Qty

Loc Code

ST300

1351

116105

5

116548

43

117611

30

119109

1273

119109

April-23-12 4:01:47 PM

Shop Packet Print

Page 3

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Page 4

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D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 23/04/2012

Required Date: 07/05/2012

Start Qty: 1.00

Required Qty: 1.00

MS21920-20

Purchased

No

270

Each

128.0000

4

4

MS21920-20

Clamp (per MIL-DTL-8783C)

**

AB 12-5-6

Location

Loc Qty

Loc Code

LG050

128

116799

8

120676

20

121067

50

121274

50

D206-667-101TRN

Manufactured

No

110

Each

0.0000

1

1

D206-667-101TRN

Crosstube Turning Detail

**

DP 12-5-1

B8P49

①

April-23-12 4:01:47 PM

Shop Packet Print

Page 4

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

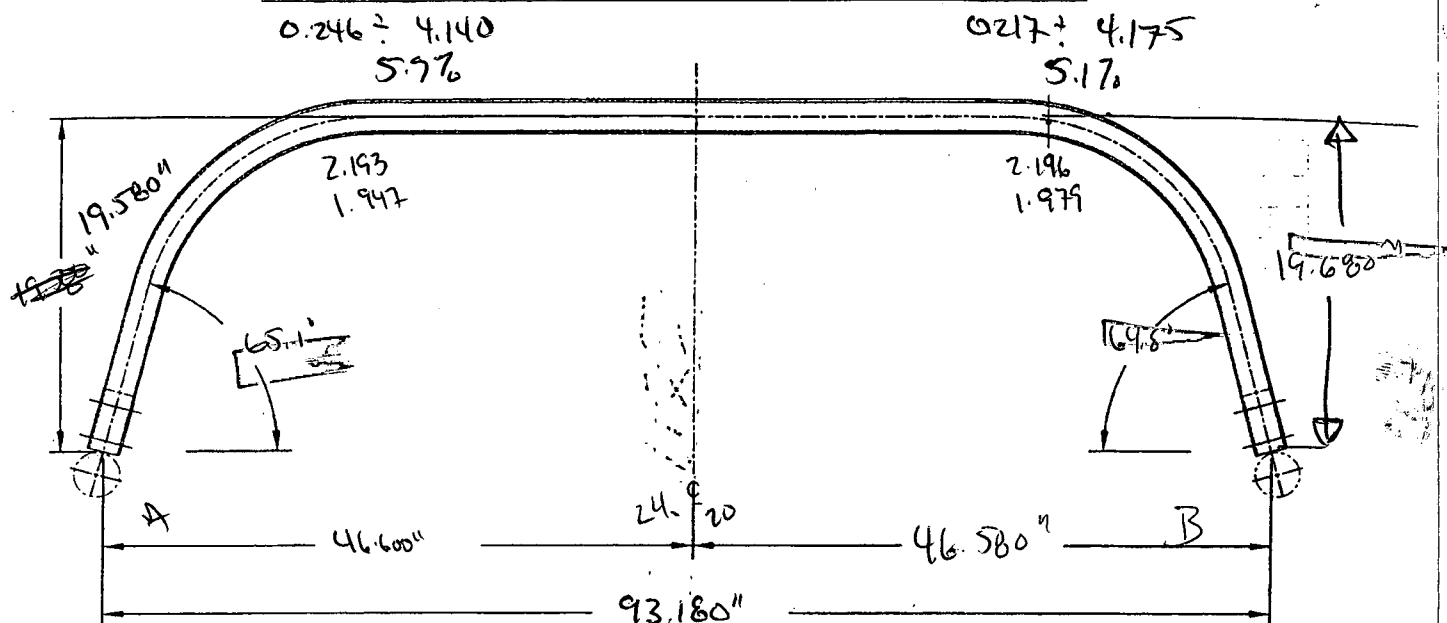
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	83703
Description: Crosstube High Fwd (206B)		Part Number:	D206-667-101
Inspection Dwg: D206-667-141	Rev: C	Page 1 of 1	

Required Dimension	Min	Max
Height	19.41	19.67
1/2 Span	36.47	36.73
Angle	65	67
Total Span	72.94	73.46



Comments	
Side A = 5.97% crushing @ 24 passes.	
Side B = 5.17% crushing @ 20 passes	
OK OP 12.05.06 PS1642	

QC15 Inspection	8
Date	17/05/07

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.07.30	Dimensions revised per Dwg Rev C	KJ	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART SERVICE INSTRUCTION

TO AMEND INSTRUCTIONS FOR CONTINUOUS AIRWORTHINESS ICA-D206-667 Rev. 3 OR LATER
REF. CANADIAN STC: SH01-5
REF. FAA STC: SR01304NY
REF. EASA STC: EASA.IM.R.S.01179

PURPOSE:

The supports on the following crosstubes are now installed using Proseal instead of Magnobond:

D206-667-101 @ CHG 004
D206-667-103 @ CHG 005
D206-667-107 @ CHG 002
D206-667-201 @ CHG 004

D206-667-203 @ CHG 004
D206-667-207 @ CHG 002
D407-667-105 @ CHG 004

CHANGE:

For the crosstubes listed above, section 32.4 of ICA-D206-667 is amended as follows. Use Figures 32-4 to 32-8 of ICA-D206-667 for further reference. For crosstubes of an earlier change number, it is recommended that if the supports are removed, the supports should be reinstalled using the procedure listed below.

32.4 SUPPORT INSTALLATION

- 32.4.1 Locate the area on crosstube for installation of support (ref. Figures 32-4 to 32-8 of ICA-D206-667). For D206-667-101/-103/-107/-201 and D407-667-105 crosstubes, the outward face of the support tabs should be 13.08" (332mm) from the crosstube center. For D206-667-203/-207 crosstubes, the outward face of the support tabs should be 10.03" (255mm) from the crosstube center. Ensure paint finish of crosstube is intact; touch up as required per Chapter 5 (5.3.9) of ICA-D206-667.
- 32.4.2 If present, remove any paint/primer on bottom of supports. Abrade mating surfaces of support and crosstube with 400-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.3 Ensure a layer of 3M Scotch-Weld 2216 B/A Epoxy Adhesive is on the bottom of the support. If required, either apply or touch-up support to have a 0.03" to 0.05" thick layer of adhesive over the entire mating surface. Allow supports to cure for 24 hours.
- 32.4.4 Abrade mating surfaces of support (after cure) and crosstube with 180-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.5 Apply a 0.04" to 0.07" thick layer of Proseal 890 Class B or AMS-S-8802 Class B sealant underneath applicable support and install support.
- 32.4.6 Install the clamps opposite to crosstube support as shown in Figures 32-4 to 32-8 of ICA-D206-667. Install rubber cushions underneath each clamp around the bottom circumference of the crosstube up to the crosstube centerline. Torque clamps 80-100 in-lb (9.0-11.3 Nm). It is acceptable to use smaller or larger sized MS21920-XX clamps than those listed in ICA-D206-667, ensure that after torquing the clamps per this instruction, the nuts are in safety but not bottomed out.
- 32.4.7 Prior to installing crosstube on aircraft, allow supports to cure for 72 hours and recheck torque on clamps.

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
DAO # 01-O-01

APPROVED

BY: *[Signature]*
D. SHEPHERD (DE # 02)

DATE: 11.07.20
CERT. NO.: SH01-5
ISSUE NO.: 3

A	NEW ISSUE	CP	11.07.15
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>q</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	<i>q</i>		
CHECKED	<i>ASS</i>	DRAWING NO.	REV. A
MFG. APPR.	<i>N/A</i>	DSI 9565	SHEET 1 OF 1
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	SUPPORT INSTALLATION CHANGE	NTS
DATE	11.07.15	COPYRIGHT © 2011 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

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WITHOUT NOTICE

WORK ORDER
NO. 1204124
03103
MCS
RETURN TO
ENGINEERING
SHOP COPY

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Item	Qty -141	Part Number	Description
1	X	D206-667-141	CROSSTUBE ASSEMBLY (206B HIGH FWD)
2	1	D6001-105	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6001-105
FINISHED LENGTH = 93.18±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-141" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 11.3 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 12 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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WORK ORDER

NO. 83703 MLJ

12/04/24

DEO ATTACHED

OCW#11-615
11.07.26

UNDER REVIEW

RELEASED
08/11/12/MLJ

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN C4-3, C5-3 & D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>RF</u>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	<u>RF</u>		
CHECKED	<u>RF</u>	DRAWING NO.	REV. C
MFG. APPR.	<u>RF</u>	D206-667-141	SHEET 1 OF 4
APPROVED	<u>RF</u>	TITLE	SCALE
DE APPR.	<u>RF</u>	CROSSTUBE ASS'Y (206B HIGH FWD)	NTS
DATE	08.11.06	<small>COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE				By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

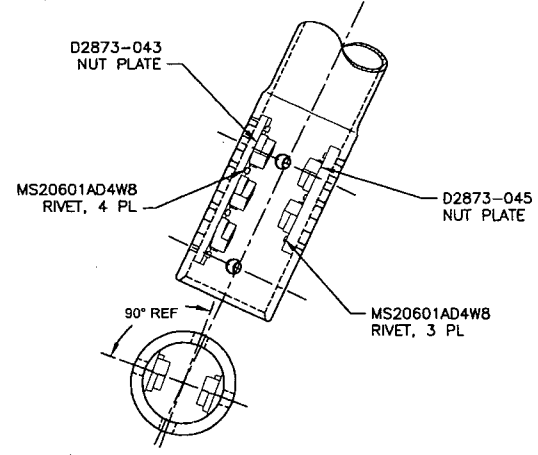
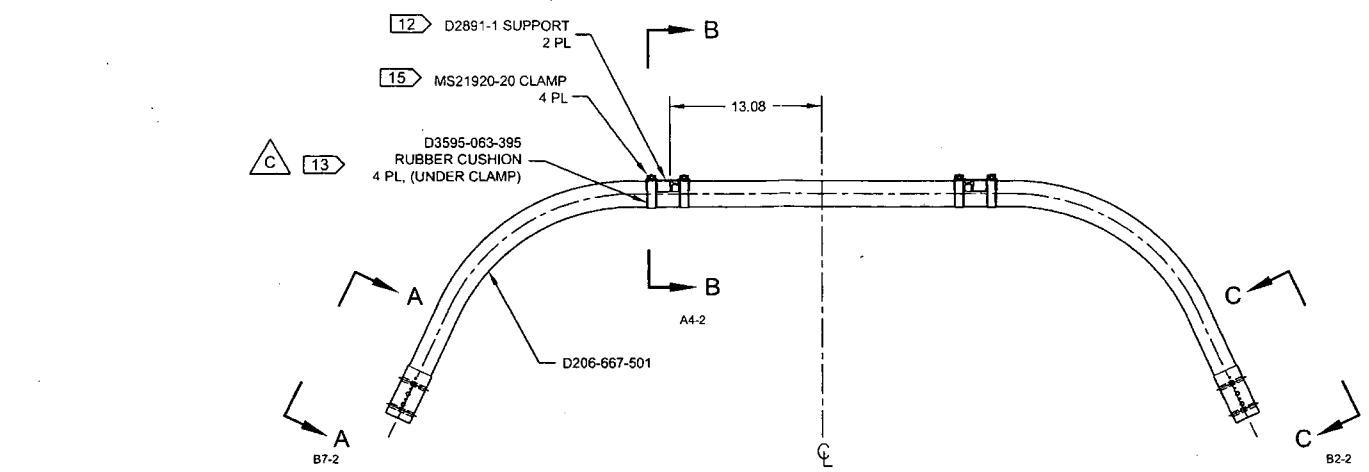
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

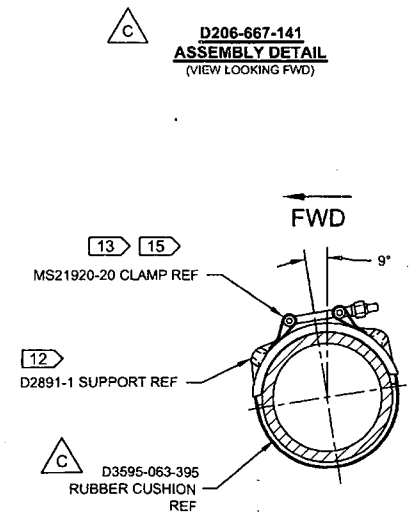
83703

REV #11-615
11.07.28
UNDER REVIEW
UP 12.06.13
RELEASED
08/11/2006

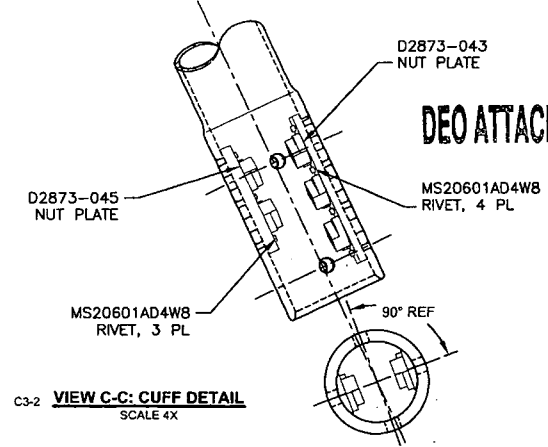
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C6-2 **VIEW A-A: CUFF DETAIL**
SCALE 4X



D5-2 **SECTION B-B**
SCALE 5X



C3-2 **VIEW C-C: CUFF DETAIL**
SCALE 4X

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	RF	D206-667-141	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASSY (206B HIGH FWD)	NTS
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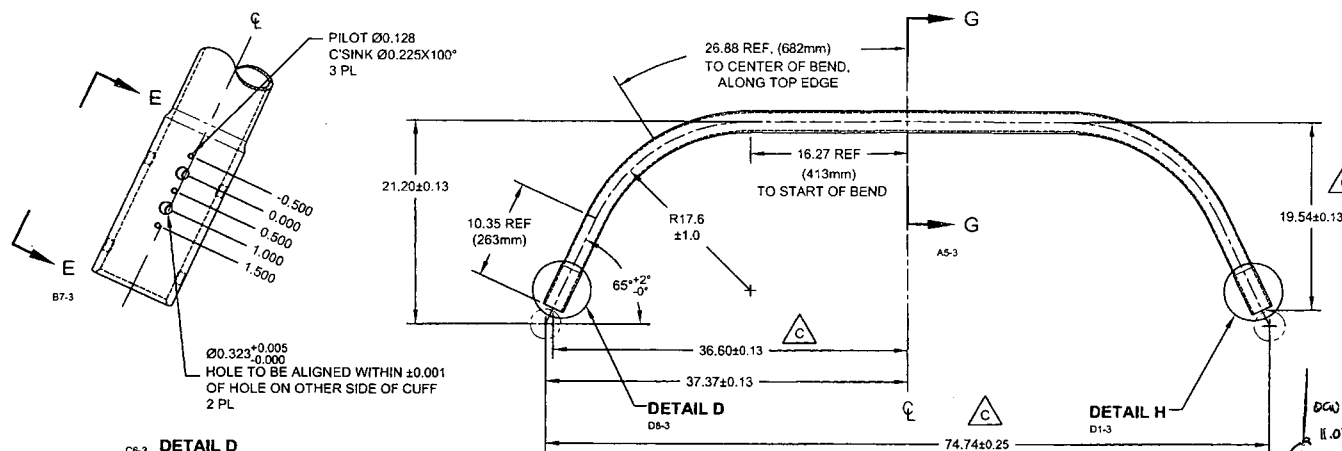
W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE				By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

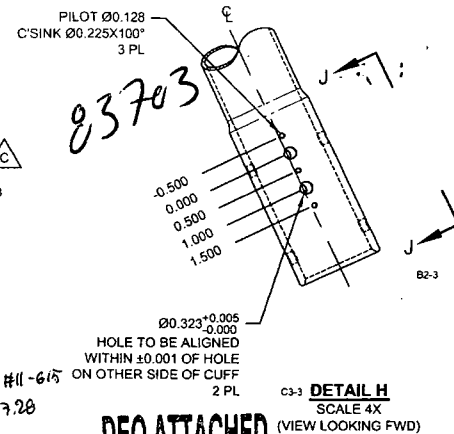
NOTE: Date & initial all entries



C6-3 **DETAIL D**
SCALE 4X
(VIEW LOOKING FWD)

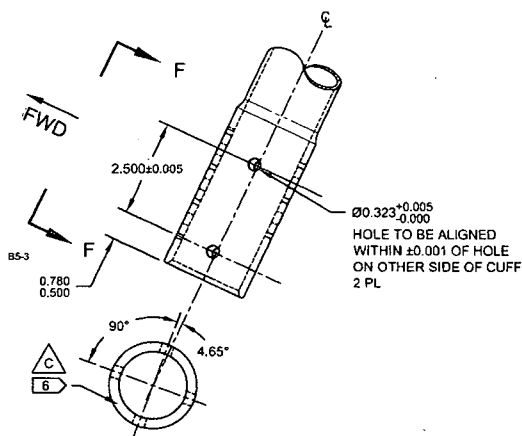
D206-667-501
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)

UNDER REVIEW
11.07.06

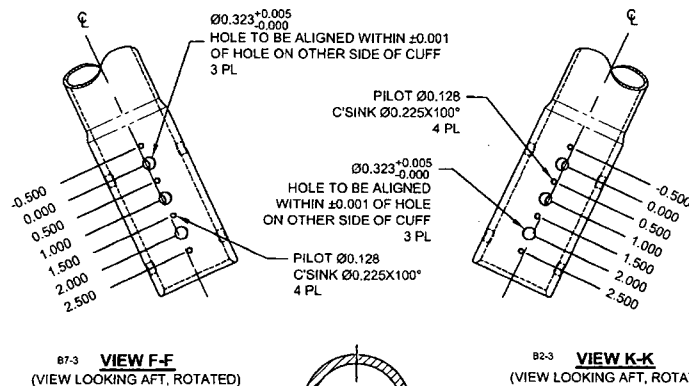


C3-3 **DETAIL H**
SCALE 4X
(VIEW LOOKING FWD)

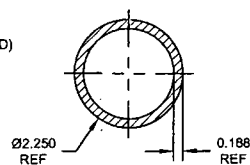
DEO ATTACHED
RELEASED
08/11/2006



D8-3 **VIEW E-E:**
CUFF DETAIL
SCALE 4X

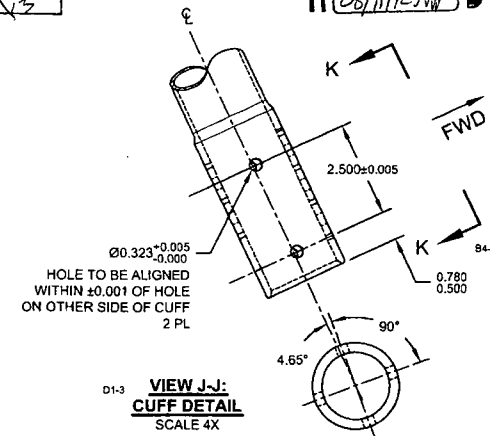


B7-3 **VIEW F-F**
(VIEW LOOKING AFT, ROTATED)



D4-3 **SECTION G-G**
SCALE 5X

B2-3 **VIEW K-K**
(VIEW LOOKING AFT, ROTATED)



D1-3 **VIEW J-J:**
CUFF DETAIL
SCALE 4X

DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CP	DRAWING NO.	REV. C
MFG. APPR.	EP	D206-667-141	SHEET 3 OF 4
APPROVED	JP	TITLE	SCALE
DE APPR.	JP	CROSSTUBE ASSY (206B HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2006 BY DART AEROSPACE LTD	
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DRAWING NO. D206-667-141	TITLE CROSSTUBE ASS'Y (206B HIGH FWD)	REV. C	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-141-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>JD</i>	APPROVED <i>MD</i>		DE APPR. <i>MD</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -141	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
MD

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 05648

PAGE 1 OF 1

CLIENT ART AEROSPACE DATE MAY-04-2012 TIME AM ☒ PM ☐
ATTENTION LYNDA, CHANTAL, MATT ACUREN JOB NO. 188-12-C0121
ADDRESS 1270, ABERDEEN ST. PO/WO NO. 16903
HAUKES BURY WORK LOCATION AS ADDRESS
PROJECT (PT) WET FLUORESCENT LIQUID PENETRANT INSPECTION ON 8 "CROSSTUBE" 1 X ENGINE PORT FITTING ACCEPTANCE STD. ASTM 1417/ASD 38 REV./DATE 2005
ITEM(S) EXAMINED - SEE BELOW ELK TUBE

JOB DESCRIPTION PROCEDURE NO. LT-002 REV./DATE 2009 TECHNIQUE NO. LT-002 REV./DATE 2009

PART NO. MATERIAL ALUMINUM/SUS THICKNESS N/A
SCOPE PERFORMED A WET FLUO LPE ON 100% OF THE EXTERNAL SURFACE ON ITEMS MENTIONED BELOW

TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☐ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
FAMILY BRAND MAGNAFLUX BLACK LIGHT S/N 13798 ☒ OUTPUT > 1000 μ W/cm² ☐ AMBIENT < 2 fc
PENETRANT 2K-67 MINIMUM DWELL TIME 45 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER H2O MINIMUM DRY TIME >10 MIN. OTHER
DEVELOPER SKD-52 MINIMUM DWELL TIME 30 MIN. LIGHT METER S/N 1098866 CAL DUE DATE 05/28/12
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☐ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

1	ATTACH. BIRD W.O.I.D	83249	✓	ITEM ID	D4137-1 REVID PRELIM
2	TUBE W.O.I.D	83735	✓	ITEM ID	D4138-1 REVID PRELIM
3	CROSSTUBE FWD W.O.I.D	83703	✓	ITEM ID	D206-667-101
4	" FWD W.O.I.D	83702	✓	ITEM ID	D206-667-101
5	" FWD W.O.I.D	83709	✓	ITEM ID	D407-667-105
6	" FWD W.O.I.D	83708	✓	ITEM ID	D407-667-105
7	" AFT W.O.I.D	83184	✓	ITEM ID	D412-664-203
8	" AFT W.O.I.D	83185	✓	ITEM ID	D412-664-203
9	" AFT W.O.I.D	82114	✓	ITEM ID	D407-667-205
10	" AFT W.O.I.D	82113	✓		

NO RELEVANT INDICATION WAS DETECTED AS PER

APPLICABLE STANDARD

1205-04

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE Matthew Murdock SIGNATURE Matthew Murdock DTR # E84955
TECHNICIAN (SIGNATURE): YVES BERSIER SIGNATURE YVES BERSIER REPORT REVIEWED BY:
NAME (PRINT): YVES BERSIER 1ST TECHNICIAN NAME INITIALS
CGSB LEVEL 2 SNT LEVEL 2 CGSB LEVEL — SNT LEVEL — 2ND TECHNICIAN
CGSB REG. NO. 3049 CGSB REG. NO. —

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY



Client: •

Contact:

Location:

Description:

Report #'s:

Daily Time Report

EE-84955

Form dated September 2010

Job #:

Day:

P.O. #:

Vehicle #

Sun

Mon

Tues

Date:

Wed

W.O #:

Camera #:

MAY-04-2012

Thurs Fri Sat

188-12-0121

100% of the total sample size. The results of the analysis are presented in Table 1. The results show that the majority of the sample (80%) was female, and the majority of the sample (80%) was aged 18-24. The majority of the sample (80%) was from the United States, and the majority of the sample (80%) was from the Midwest region. The majority of the sample (80%) was from the Midwest region, and the majority of the sample (80%) was from the Midwest region.

[illegible]

WELD INSPECTION SUMMARY

Weld Diameter										Long Seam								Circ. Seam							
Schedule/Thickness										Thickness								Thickness							
Quantity										Lineal Ft.								Lineal Ft.							

Film:

Pcs. 2 ³/₄ x 17"

Pcs. 3 1/2 x 17"

Pcs. 4 1/2 x 17"

Pcs. 14" x 17"

Pcs.

Re-billable expenses:

Equipment charges:

Client Representative:

North - March 18

Consumables

(cans / litres):

UT



PT


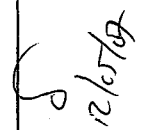
MT

NOTES:

ACUREN 1-877-299-2857

Cambridge, ON	(519) 622-3112 • Fax (519) 622-1326
Cantley, QC	(819) 360-0685 • Fax (819)-827-3513
Cornwall, ON	(613) 931-1261 • Fax (613) 931-2777
Gaspé, QC	(418) 392-3613 • Fax (418) 392-4114
Halifax, NS	(902) 443-4448 • Fax (902) 445-5090
Jonquiere, QC	(418) 542-8273 • Fax (418) 542-5494
Mississauga, ON	(905) 673-9899 • Fax (905) 673-8394
Montreal, QC	(450) 492-3399 • Fax (450) 492-5682
North Bay, ON	(705) 840-8107 • Fax (705) 476-6683
Oakville, ON	(905) 825-8595 • Fax (905) 825-8598
Pickering, ON	(905) 839-0015 • Fax (905) 839-5641
Port Elgin, ON	(519) 389-6797 • Fax (519) 389-6799
St. John's, NL	(709) 753-2100 • Fax (709) 753-7011
Sarnia, ON	(519) 336-3021 • Fax (519) 336-8220
Sherbrooke, QC	(819) 620-5456 • Fax (819) 346-6828
Sudbury, ON	(705) 522-1849 • Fax (705) 522-9926
Thunder Bay, ON	(807) 475-4240 • Fax (807) 577-2017
Timmins, ON	(705) 365-8313 • Fax (705) 267-2855
Val D'Or, QC	(819) 856-6789 • Fax (819) 825-9564

Dart Aerospace Ltd

W/O: .		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
12.05.03	209/ 210 230	Apply clear coat to entire of outside surface of crastube, except mask off area of supports				 12.05.04 PS/042	 12/07/04

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries